

**College of Science and Technology  
Department of Physics  
Course Syllabus**

**PHYS–111: Fundamentals of Physics I Lab**

**I. Course Description**

This is laboratory course designed to accompany PHYS 109 (Non – Calculus base). This course includes laboratory experiments in mechanics, wave motion, and fluids. The class meets one two-hour period per week. Corequisite: PHYS 109.

**II. Rationale**

This course gives the students laboratory experience demonstrating the principles of mechanics, wave motion, heat, and fluids.

**III. Competencies**

- *Personal and Professional Responsibility.* Students will demonstrate personal and professional proficiencies in pursuit of academic excellence in all courses pursued.
- *Subject Matter and Presentation Skills.* Performance in courses as evidenced by final grades will document success levels in the mastery of subject matter, written and oral communication skills.
- *Planning and Organization.* Students will demonstrate ability to plan and organize personal and professional skills. Students will also demonstrate an ability to generalize techniques to structure activities that will impact teaching and learning.

**IV. Behavioral Objectives**

At the end of this course, the student will be able to:

- Understand the physical environment and its relationship to man.
- Gain knowledge and understanding of scientific laws, principles, and theories.
- Develop the ability to think critically and independently, and to reason effectively.
- Be proficient in oral articulation and written expression.

- Be adept in general and scientific terminology.

## **V. Course Content**

- Vectors: The Force Table
- Forces on a Body
- Rigid Bodies in Equilibrium: Forces and Torques
- Free Fall: Acceleration Due to Gravity
- Kinetic and Static Friction
- Projectile Motion
- Air Track: Conservation of Momentum in One Dimension
- Air Track: Conservation of Momentum in Two Dimensions
- Centripetal Force
- Density of Fluids
- Surface Tension
- Viscosity of Fluids in Capillary Tubes
- Boyle's Law

## **VI. Learning Activities**

Laboratory measurements

Data recording

Data analysis

Report of measurements and analysis in a written laboratory report

## **VII. Special Course Requirements**

The *Laboratory Manual* is provided by the Department of Physics through the instructor when the student presents a receipt for the payment of \$4.00 to Account No. 7-7278.

In addition to the laboratory manual, the student will require the following materials:

1. Loose leaf paper for writing laboratory reports
2. Metric ruler
3. Protractor
4. Compass
5. Scientific handheld calculator
6. Good quality graph paper

## VIII. Evaluation Procedures

The grade in this course will be based solely upon the number and quality of laboratory reports that are submitted to the instructor. The laboratory report is to have the following parts:

1. Student's Name
2. Exercise Number
3. Title of the Exercise
4. Purpose or Objective
5. Theory
6. Procedure and Materials
7. Data and Results
8. Conclusions

Grading scale:	A =	90 or more points
	B =	80 – 89 points
	C =	70 – 79 points
	D =	60 – 69 points
	F =	59 or below

## IX. References

### Textbook:

Wilson, J. D., *College Physics, 3rd Ed.*, Saunders College Publishing, Fort Worth, 1996.

### Recommended Journals

*The Physics Teacher*

*Physics Today*

*Computing in Science & Engineering*

*Journal of Undergraduate Research*

*Journal of College Science Teaching*